

TWO NEW SPECIES OF NOMADA, SUBGENUS GNATHIAS,
FROM CALIFORNIA¹

(Hymenoptera: Apoidea)

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Up to the present time no species of *Gnathias* has been described or recorded from California, except that Fowler, in 1899, recorded what is apparently a single species of the group as *lepida* (♂) and *bisignata* (♀), both names having been incorrectly applied. There are, however, several species of *Gnathias* resident in California, and by request I am now describing two new species to provide names for the recording of biological data.

Nomada (Gnathias) opacella Timberlake, new species*N. lepida* Fowler, 1899, Ent. News, 10, pp. 159, 161, ♂ (not Cresson).*N. bisignata* Fowler, 1899, *Ibid.*, pp. 159, 162, ♀ (not Say).

This is a small *Gnathias*, which differs from similar eastern species in having the abdomen comparatively dullish, with a fine obscure puncturation, and from several other western species of similar dullish aspect in having the apical depression of the tergites comparatively broad, nude, and punctureless, and in having distinct yellow maculae on the second tergite. The male differs from *N. lepida* Cresson in the entirely black scape, in the more infuscated legs and abdomen, and in having antennal joint 4 much longer than 3.

Female—Dark-reddish ferruginous, with black markings on head and thorax. Basal and lateral margins of labrum more or less yellow. Entire posterior surface of head black, except rather narrow orbital stripes that unite with a transverse band across the vertex; a large quadrate black area on face, extending from antennae to ocellar region, enclosed by red orbital stripes which have an inward-directed spur before the summit of the eyes by which the black is notched on each side, the black area usually enclosing a small red patch in front of anterior ocellus. Sutures from antennal sockets to clypeus more or less black. Mesoscutum with four red and three black stripes that are nearly equal; the lateral margins in front of tegulae also narrowly black. Sternum and sides of prothorax, area of mesopleura just beneath wings and behind tubercles, metapleura and contiguous margin of propodeum, and median stripe on propodeum, black. Red mark on pleura generally large and extending across the posterior part of mesosternum. Abdomen dark red, more or less coppery on apical depression of tergites; the base of tergite 1 broadly black, as is the concealed base of following tergites, which thus imparts a duskiess to the coloration. On each side of tergite 2 a rather small, pale-yellow spot; sometimes a pair of smaller spots on tergite 3. Antennae dark

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ferruginous, with the scape black above except toward base, and the flagellum infuscated above. Legs dark red; the coxae, except more or less at apex or on anterior side, mark at base of front and middle femora beneath, hind femora more or less on anterior and posterior sides, and hind tarsi except toward apex, black. Tegulae ferruginous. Wings smoky except for the usual clear spot beyond the submarginal and discal cells. Nervures fuscous, the stigma dull ferruginous.

Head and thorax with the usual dense, coarse puncturation; abdomen dullish; the base of tergites 2 and 3 very minutely and densely punctate, the apical depression of tergites broad, nude, and impunctate. Apex of pygidial plate rounded, sometimes slightly truncate. Scutellum weakly bilobate. Antennae moderately elongate, the middle joints of flagellum about one and one-half times longer than thick; joint 3 on short side a little more than half as long as joint 4. Apex of hind tibiae opposite spurs armed with one long, slender bristle and three progressively shorter, coarse, curved black bristles. Second and third submarginal cells broad below, the third about half as wide as the second above. Pubescence white, becoming more or less yellowish above, with long, coarse, dusky bristles intermixed on face and scape of antennae. Apical felt band of tergite 5 narrow and white. Length, 6.5-7 mm.; anterior wing, 5.5-6.1 mm.

Male—Head and thorax black. Mandibles except tips, labrum, clypeus except upper margin of disc, lateral marks slender above and reaching level of antennae, and sometimes a short postorbital line (generally restricted to small spot next to base of mandibles), lemon yellow. Thorax entirely black, or tubercles more or less reddish, and more rarely a small yellow spot on anterior part of pleura. Abdomen dull ferruginous, black and yellow; basal half of tergite 1 black, and a broad black band at the base of tergites 2 to 6 often appearing like an apical or preapical band on the preceding segment; a yellow band on tergites 1 to 6 usually narrowly interrupted on 1, broadly interrupted on 2 and 3, and sometimes more or less interrupted on 4; the yellow on tergites 2 to 6 with a more or less distinct posterior emargination on each side by intrusion of the darker ground color, these intrusions represented on tergite 1 generally by a small black, oval or roundish spot on each side; apical depression of tergites and area between the interrupted parts of bands, ferruginous. Venter with broad yellow bands. Scape of antennae entirely black; flagellum black above, more narrowly toward apex, and dull ferruginous beneath. Legs black behind, rather narrowly so on front trochanters, femora, and tibiae, the hind femora dark except on upper anterior side, and the hind tibiae dark except on inner side; legs otherwise ferruginous, more or less washed with yellow, especially on anterior side of front femora and tibiae, anterior side of middle femora, and at apex of the light part of hind femora and of the middle and hind tibiae; hind tarsi dark, the front pair ferruginous tinged with brown on outer side, and the middle intermediate in color. Tegulae dark ferruginous. Wings nearly as in female.

Inner orbits of eyes distinctly converging below. Antennae moderately elongate, the scape moderately swollen; joint 4 a little longer than 13 and somewhat less than twice as long as 3; joints 5 to 12 rather strongly sinuate and denticulate on outer margin beneath. Tergite 7 distinctly notched at apex. Length, 5.5-9 mm.; anterior wing, 4.5-6.5 mm.

Variation: Rarely, the yellow marks on tergite 1 reduced to small spots or the marks on tergites 1 to 4 all reduced to small lateral spots; conversely and more rarely, the yellow markings may form wide bands, very narrowly interrupted on tergite 1, incompletely interrupted on tergite 2, and entire on following segments.

Holotype female and allotype, male, BERKELEY, CALIFORNIA, on *Ranunculus californicus*, March 17, 1941 (E. G. Linsley).

The types and following paratypes in collection of Citrus Experiment Station, Riverside: 2 females, 27 males taken with the types; 1 male, Berkeley hills, March 4, 1932 (Margaret L. Cook); 1 male, 1 female, Visalia, March 29 and April 21, 1939 (F. T. Scott); 2 females, Pine Flat, near California Hot Springs, flying over ground, May 3, 1947 (Timberlake); and 1 female, Laguna Mountains, San Diego County, May 17, 1948 (Crickmer). Paratypes in University of California collection, Berkeley, as follows: 1 female, Orinda, Contra Costa County, on *Ranunculus*, March 21, 1946 (R. Smith and MacSwain); 1 male, Berkeley, March 16, 1939; and 5 females, 42 males, Berkeley (J. W. MacSwain), collected April 15 and 19, 1946; March 11, 13, 16, 1947, and March 21, 25, 26 and April 3, 1952.

Nomada (*Gnathias*) *debilis* Timberlake, new species

Allied to *opacella*, with which it agrees closely in sculpture, but smaller and having antennae of both sexes considerably shorter.

Female—Clear dark ferruginous, with the following black markings: a dot in suture on each side of clypeus; mark between and extending a little above antennal sockets; transverse mark covering ocelli; large area on occiput (leaving genae broadly red); prosternum and mark on sides of pronotum; median stripe on mesoscutum (and sometimes a short stripe on each side); small spot on middle of propodeum; depressed areas below and behind wings; metapleura more or less and contiguous anterior margin of sides of propodeum, with an extension to area between middle and hind coxae on each side; base of front coxae, middle coxae except apex, and posterior side of hind coxae except apex. Hind femora slightly infuscated beneath, and hind basitarsi more or less fuscous on outer side. Antennae uniformly light ferruginous. Mandibles rufous at apex. Abdomen clear ferruginous, with extreme base of tergite 1 slightly blackened. A small yellow spot on each side of tergite 2, and sometimes traces of lateral spots on tergite 3. Tegulae and wings as in *opacella*, except that the stigma is more infuscated.

Structure, sculpture, and pubescence about as in *opacella*, but head more transverse and antennae considerably shorter, with joint 3 three-fourths to four-fifths as long as 4, and the middle joints of flagellum not more than one and one-third times longer than thick. Length, 5–6.5 mm.; anterior wing, 4.5–5 m.

Male—Head and thorax black. Genae at anterior end of eyes, mandibles except reddish tips, labrum, and broad band across anterior border of face,

extending very narrowly upward on orbits to level of antennae, pale yellow (the black of face more or less evenly truncate anteriorly and covering base of clypeus). Two red spots on scutellum, sometimes enlarged and confluent, and sometimes a small red spot on each side of hind margin of pronotum. Tubercles ferruginous or yellow or tipped with yellow, and a small yellowish mark on anterior border of the sternopleural region of mesothorax on each side. Abdomen clear ferruginous, except that the base of tergites 2 to 7 is black, imparting a duskiess to the overlying portion of preceding segment, and nearly the basal half of tergite 1 is black. A moderately large, nearly circular yellow mark on each side of tergite 2, smaller marks on tergite 3, and usually a small yellow spot on each side of tergite 4. Legs ferruginous, but the coxae almost entirely, posterior side of trochanters and of hind femora, under margin of front and middle femora and outer side of hind basitarsi, black; front and middle tibiae a little infuscated behind. Antennae ferruginous, but scape black, either entirely or often with a yellow or reddish stripe beneath; first four joints of flagellum broadly, and the following joint to apex narrowly, black above. Tegulae and wings as in female.

Other characters about as in male of *opacella*, except that the antennae are considerable shorter; antennal joint 4 equal to 13, and joint 3 on its short side about two-thirds as long as 4; middle joints of flagellum about one and one-third times longer than thick. Length, 5-6.5 mm.; anterior wing, 4.5-5 mm.

Holotype female and allotype, TETLEY PARK, SEELEY FLAT, SAN BERNARDINNO MTS., CALIFORNIA, about 4,500 feet, at flowers of apple, May 15, 1937 (Timberlake). Paratypes as follows: 12 females, on *Potentilla glandulosa*, May 13, 1934; 3 females on same flowers, May 23, 1936; 2 females on *Ceanothus integerrimus*, May 16, 1936; 1 female, 13 males at flowers of apple, 1 male on *Salix laevigata*, 2 males on *Montia perfoliata*, and 8 males on *Nemophila integrifolia*, May 15, 1937; 2 males flying over ground and 3 males on *Nemophila integrifolia*, May 8, 1940 (Timberlake); and 1 female, May 8, 1940 (C. M. Dammers), all at type locality; 1 male, Mill Creek, San Bernardino Mountains, 6,000 feet, on *Ceanothus cordulatus*, May 20, 1946; and 1 male same locality, on *Arctostaphylos patula*, May 16, 1948 (Timberlake). Types in collection of Citrus Experiment Station, Riverside.

Var. a. — Female with black markings nearly extensive as in *opacella*, with the red forming a band across upper part of frons; the legs and abdomen clear red, but the black forming three stripes on mesoscutum; a median stripe or propodeum, and a broad oblique band from hind wings to middle and hind coxae (Sierra Nevada). 1 female, Miami Ranger Station, Mariposa County, June 4 and 7, 1942 (E. G. Linsley); and 1 female, Oakhurst, Madera County, on *Ceanothus*, June 5, 1942 (Arthur J. Walz).